

S/078/62/007/010/007/008  
B144/B186

Solid solutions in the ...

stability of the solid hydride-hydroxide solutions greatly exceeds that of the pure hydrides; hence the hydrides can be used in this form up to 500 - 550°C. There are 6 figures and 4 tables.

SUBMITTED: February 9, 1962

Card 2/2

37385

S/020/62/143/006/018/024  
B106/B138

11.12.40

AUTHORS: Mikheyeva, V. I., and Shkrabkina, M. M.

TITLE: Solid solutions of sodium and potassium hydrides in the hydroxides of these elements

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 143, no. 6, 1962, 1362-1363

TEXT: The solubility of sodium and potassium hydrides in the anhydrous hydroxides of these elements was quantitatively investigated by thermal analysis and the powder method of x-ray phase analysis. Fig. 1 shows the results. The system NaOH - NaH was investigated up to 60% NaH, and the system KOH - KH up to 48% KH by thermal analysis, since the hydrides undergo intense thermal decomposition at higher hydride concentrations. The hydrides and their solid solutions were analyzed by volumetric determination of the hydrogen released on treatment of the specimens with water. Dissociation of the hydrides according to the equation  $2 MeH = 2 Me + H_2$  occurs in the binary systems investigated below 600°C, but there is no chemical reaction of the system components according to  $MeOH + MeH \rightleftharpoons Me_2O + H_2$ .

Card 1/2

Solid solutions of sodium and...

S/020/62/143/006/016/024  
B106/B138

Chemical analysis of the solid solutions after thermal analysis showed that the hydrides dissolved in the hydroxides have higher thermal stability than the pure hydrides. After heating to 530°C the solid solution with 18.5% NaH contained 12.4% NaH, and the solution with 20% KH contained 17% KH, while the dissociation pressure of pure NaH reached atmospheric pressure at 421°C, and that of pure KH at 428°C. This raising of the upper temperature limit for the existence of alkali hydrides by dissolving the hydrides in the corresponding hydroxides is of practical interest for the use of these hydrides as reducing agents for refractory compounds. There is 1 figure. The English-language references read as follows: H. L. Alexander, Iron and Steel Eng., 24, no. 5, 44 (1947); H. N. Gilbert, US Pat. 2377876, 1945. X

ASSOCIATION: Institut obshchey i neorganicheskoy khimii im. N. S. Kurnakova Akademii nauk SSSR (Institute of General and Inorganic Chemistry imeni N. S. Kurnakov of the Academy of Sciences USSR)

PRESENTED: December 13, 1961, by I. I. Chernyayev, Academician

Card 2/3

SHKRABO, V.A.

Geological structure of the western end of the Beke-Bashkudukskaya  
anticlinal fold and results of drilling on the Tuybkaragan Peninsula.  
Avtoref. nauch. trud. VNIGRI no.17:230-234 no.17:230-234 '56.  
(MIRA 11:6)

(Caspian Sea region--Petroleum geology)

SHKRODYUK, G.F.

25797 Shkrodyuk, G. F. Vyshe Kachestvo Lechebnoy Pomoshi. Zdravookhraneniye Kazakhstana, 1948, No 4, S. 3-9.

SO: Letoris' Zhurnal Statey, No. 30, Moscow, 1948

544K-47 10

"Simulators of Military Dosimetry Instruments," by Maj I. Shkrad-yuk, Voenny Vestnik, No 9, Sep 56, pp 61-66

The author suggests the use, for training purposes, of a radio transmitter located at the epicenter of an imaginary atomic bomb explosion to simulate an area contaminated with radioactivity. The electromagnetic oscillations of the transmitter are recorded by "acting models" (radio receivers) of roentgenometers, indicators, and dosimeters. Descriptions and circuit diagrams of the above "acting models" are presented. (U)

544K-1322

SHKRADYUK, T.F.

Pulmonary and esophageal cancer in Kazakhstan. Trudy Inst.klin.1  
eksp.khir AN Kazakh.SSR 5:12-17 '59. (MIRA 13:5)  
(KAZAKHSTAN--ESOPHAGUS--CANCER)  
(KAZAKHSTAN--LUNGS--CANCER)

SHKRANTS, O

# USSR.

✓ Effect of bicarbonate baths, according to Lepeshinskaya, I. Melka, Ya. Peregrin, O. Shkrants (Physiol. Inst., Military Med. Acad., Graduate School of Czech.). *Klin. Med. (U.S.S.R.)* 32, No. 11, 72-4 (1954); cf. *ibid.* 31, No. 1, 26 (1953).—Expts. were carried out to test the contention of Lepeshinskaya that  $\text{NaHCO}_3$  baths cause a heightened metabolism. It was found that serum Na is not increased after a bath, the alk. reserve of the plasma is not decreased during bathing, the pH of the urine and the basal metabolism rate remains unchanged and the body weight remains either unchanged or undergoes slight upward or downward changes. Only ingestion of bicarbonate affords a possibility to study its action upon metabolism. A. S. Mirkin



24557  
S/198/61/007/001/004/008  
D205/D305

16. 4600

AUTHORS: Meyzlik, L., and Shkrashek, Y. (Brno)

TITLE: On solving systems of linear non-homogeneous equations

PERIODICAL: Prykladna mekhanika, v. 7. no. 1, 1961, 5' - 60

TEXT: Two methods are given for solving a system of linear non-homogeneous equations: 1) Use of a known solution of a system of  $n$  equations which differ from the given system in certain coefficients only, and 2) Use of a known solution of a system of  $n$  equations in which the values of certain variables are given by changing the independent terms in  $m$  equations of the first system ( $m < n$ ). I. A non-homogeneous system of equations (Sl), is written in vector form

$$A_1 X = b_1; A_2 X = b_2; \dots; A_n X = b_n \quad (1.3)$$

where the symbols have their usual significance. It is supposed that the given system has a unique solution  $\bar{X}$ , which is known, e.g.

Card 1/5

24557

S/198/61/007/001/004/008  
D205/D305

On solving systems of ...

by Gauss' method, and hence, that the determinant of the system  

$$D = /a_{ik}/ \neq 0. \quad (1.5)$$

System (S2) differs from (S1) in two equations only, the  $j^{\text{th}}$  and  $k^{\text{th}}$ , in which the coefficients have been changed. The coefficients in (S2) which differ from those in (S1) are denoted by an asterisk,  $a_{j0}^*$ ,  $b_j^*$ , corresponding to  $a_{j0}$ ,  $b_j$ , etc. The  $j^{\text{th}}$  and  $k^{\text{th}}$  equations of (S2) are then, in vector form

$$A_j^* X = b_j^*; A_k^* X = b_k^* \quad (1.6)$$

and all other equations of (S2) are identical with those of (S1). It is supposed that (S2) will also have a unique solution, which is denoted by  $X^*$ . There are two methods of solving (S2). First method: A solution of  $n-2$  homogeneous equations is considered (S3),  $A_1 X = 0$ ,  $i \neq j, k$ . The rank of the matrix of (S3) is  $n-2$ , hence there will be infinitely many solutions differing from zero, depending on the two arbitrary constants. The desired solution of (S2) is then given by

Card 2/5

On solving systems of ...

24557  
S/198/61/007/001/004/008  
D205/D305

$$X^* = \bar{X} + \alpha_1 Y + \alpha_2 Z, \quad (1.10)$$

as is proved by running through the possible values of  $i$ . This method may be extended to the case when (S2) differs from (S1) by  $m$  changed equations ( $m < n$ ). In this case the solution has the form

$$X^* = \bar{X} + \alpha_1 Y_1 + \dots + \alpha_m Y_m \quad (1.17)$$

2) A system of equations (S4) is constructed, of the form  
 $A_1 X = 0; \dots; A_{j-1} X = 0; A_j X = c_1; A_{j+1} X = 0; \dots; A_n X = 0, \quad (1.32)$

where  $c_1$  is some non-zero constant, by equating all  $b_v$ , ( $v \neq j$ ) in (S1) to zero, and replacing  $b_j$  by  $c_1 \neq 0$ . If  $Y$  is a solution of

$$(S4) \text{ then } A_i Y = 0 \text{ for } i \neq j, k; A_k Y = 0; A_j Y = c_1, \quad (1.33)$$

and similar equations for a second system (S5) having a solution  $Z$ .

Card 3/5

24557

S/198/61/007/001/004/008  
D205/D305

On solving systems of ...

$B_1, B_2, C_1, C_2$ , defined as previously, are not simultaneously equal to zero. (S4) and (S5) contain equations whose left-hand sides are identical with those of equations in (S1), and hence, for solving Y and Z, the left-hand side of the transformed system of equations (S1\*) can be used (a system equivalent to (S1) which is formed by applying Gauss's algorithm) [Abstractor's note: Definition of (S1\*) is not precise]. For this it is necessary only to transform the column of independent terms in (S4) and (S5) so that the left-hand side of (S1) is reduced to the left-hand side of (S1\*). The transformed column has all its terms equal to zero except the  $j^{\text{th}}$  (in the case of (S5), the  $k^{\text{th}}$ ) and hence it is necessary to apply only such transformations as affect merely the  $p^{\text{th}}$  equation ( $p \geq j$  or  $p \geq k$ ). The system (S1) is then reconsidered in vector form with a known unique solution  $\bar{X}$ . The required solution of (S2) must satisfy the vector equation

$$X^* = \bar{X} + \beta_1 Y + \beta_2 Z, \quad (2.6)$$

Card 4/5

On solving systems of ...

S/198/61/007<sup>24557</sup>/001/004/008  
D205/D305

and the independent terms are given by

$$b_v^* = A_v X^* = b_v + \beta_1 A_v Y + \beta_2 A_v Z. \quad (2.7)$$

X\* satisfies every equation of S2) as is proved by running through the possible values of 1. This method may evidently be extended to the case when m roots of (S2) have given values. In this case, (S2) will differ from (S1) in m independent terms. There are 1 table, and 2 Soviet-bloc references.

ASSOCIATION: Politekhichnyy instytut v Brno (Brno Polytechnic Institute), CSR

SUBMITTED: February 27, 1960

Card 5/5

SHATAVA, Vladimir [Satava, Vladimir]; SHKRDLIK, Yaroslav  
[Skrdlik, Jaroslav]; MASLOBOYSHCHIKOV, V.M. [translator];  
KONOROV, A.V., red. ; NIKOLAYEVA, N.M., red. izd-va;  
KASIMOV, D.Ya., tekhn. red.

["Silikark", a porous concrete] Poristyi beton silikork. Pod red.  
A.V.Konorova. Moskva, Gosstroizdat, 1962. 230 p. Translated from  
the Czech. (MIRA 15:10)

(Lightweight concrete)

SHKREBA, V. S.

50-12-15/19

AUTHOR: Shkreba, V. S.

TITLE: Manual on the Hydrometeorological Operational Service to National Economic Organizations. Part 2. Meteorological Service  
(Rukovodstvo po operativnomu gidrometeorologicheskomu obsluzhivaniyu narodno'hozyaystvennykh organizatsiy. Chast' 2. Meteorologicheskoye obsluzhivaniye (Gidrometeoizdat, L. 1956))

PERIODICAL: Meteorologiya i Gidrologiya, 1957, Nr 12, pp. 51 - 52 (USSR)

ABSTRACT: The efficacy of the active work in the economic organization in many cases depends on the consideration and prompt satisfaction of the demands resulting from the peculiar features of the organizations to be attended. Up to the publication of this manual the extent and the organization of this work were influenced by the initiative of the specialists of the hydrometeorological service. Every manual and regulations were lacking. This want is supplied by the published book.

The advantage of this book is represented by the precise statement of the conceptions and the tasks of all kinds of the meteorological service.

Card 1/2 A great imperfection of the manual is the separation of the meteo-

Manual on the Hydrometeorological Operational Service to National Economic  
Organizations. Part 2. Meteorological Service

50-12-15/19

rological and agrometeorological service.

AVAILABLE: Library of Congress

1. Hydrometeorological manual
2. Meteorological-Services

Card 2/2



AUTHOR: Shkreba, V. S. 50-58-3-12/22  
TITLE: The Determination of the Fruit Growth by a Volumetric  
Method (Opredeleniye prirosta plodov ob'emyem metodom)  
PERIODICAL: Meteorologiya i Gidrologiya, 1958, Nr 3, p. 49  
(USSR)

ABSTRACT: In the period from the end of flowering of the fruit  
cultures until ripening the observations on the develop-  
ment of fruit are usually restricted to the approximate  
determination of the falling off of the ovaries and unripe  
fruits according to inspection. Such observations do not  
reflect the intensity of the mass increment of the fruit in  
connection with the weather conditions in the period of crop  
formation. For the purpose of determining the extent and the  
times of the active increment of fruits the author worked  
out and suggested a volume method. This method is based on  
the measurement of the volume of water displaced during  
immersion of the fruit. The method was not only employed  
for the determination of the crop increment of fruit  
plants but also in a number of agricultural cultures

Card 1/3

The Determination of the Fruit Growth by a  
Volumetric Method

50-53-3-12/22

(tomatoes, cucumbers etc.). Such observations are performed in gardens and on estates where other agrometeorological observations on fruit plants are also carried out. In every experimental district 10 trees are selected which according to their development are typical for the respective sort in the garden. From the time where the fruits have attained the necessary size the determination of the volume until the ripeness of the fruits of each of the 10 selected plants is performed. Before the performance of the determinations the following equipment has to be prepared: a glass container of 0,5 liters, a rain gauge glass of 1 liter, a rubber flask or a pipet from the aspiration psychrometer. In the first determination of the increment a label of parchment with the number of the fruit is fastened to the branch with the selected fruit and then observations are made on this fruit until the crop ripeness and the harvesting. Under the selected and labelled fruit, without cutting it off the branch, an empty glass container is fastened into which water is filled up to the marked level. Then the glass container is lowered and from the fruit the remaining water shaken off into the container. The quantity of water in the container is measured with the rain gauge glass after the removal of the fruit. As is to be seen from the description of this

Card 2/3

The Determination of the Fruit Growth by a Volumetric  
Method

50-58-3-12/22

method, it is simple and cannot cause any difficulties.  
The results of these observations on the Agricultural-  
Meteorological Station Lenino-Dachnoye in the course of  
the last years permitted considerably to improve the  
agrarian-meteorological service in the orchards.

1. Fruits--Growth 2. Volume--Measurement 3. Displacement  
gages--Applications

Card 3/3

SHKREBA, V.S.

Dependence of flowering and ripening time in some strawberry  
varieties on the temperature factor. Sbor. rab. Mosk. gidromet.  
obs. no. 1:59-63 '60. (MIRA 14:11)  
(Strawberries--Varieties)  
(Meteorology, Agricultural)

SHKREBEL', M.Ya.. Prinimali uchastiye: BLAGOVESHCHENSKAYA, K.A.;  
DZYUBENKO, G.F.; FRAGAYLOVA, V.I.; ZALESSKAYA, L.O.; KOTSERUBA,  
L.P.; KOVBASENKO, L.A.; LYAUDANSKAYA, B.Ye.; MILOVZOROV, P.Z.  
[deceased]; NEZHURBEDA, M.P.; SNITKO, K.I.; YANTSOVA, A.V..  
KRESHCHENSKIY, Ye.S., tekhn.red.

[Economy of Kiev Province; a statistical manual] Narodnoe kho-  
ziaistvo Kievskoi oblasti; statisticheskii sbornik. Kiev, Gos.  
stat.izd-vo, 1959. 255 p. (MIRA 13:3)

1. Kiev (Province) Statisticheskoye upravleniye. 2. Nachal'nik  
statisticheskogo upravleniya Kiyevskoy oblasti (for Shkrebel').  
(Kiev Province---Statistics)

SHKREBKO, A.M. (Nal'chik)

Disease incidence and organization of control of endemic goiter  
in the Kabardino-Balkar A.S.S.R. Zdrav.Ros.Feder. 3 no.8:25-28  
Ag '59. (MIRA 12:11)

1. Iz Kabardino-Balkarskogo protivozobnogo dispansera.  
(KABARDIA--GOITER)

SHISH, D.Z., gornyy inzh.; SHKREBKO, G.S., gornyy inzh.

Results of mining a block under complex mining and geological conditions. Gor. zhur. no.5:27-29 My '64.

(MIRA 17:6)

1. Shakhta "Yuzhnaya" tresta Leninruda, g. Krivoy Rog.

*Shkrebko, I. Ye.*

137-1958-2-2574

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 2, p 53 (USSR)

AUTHOR: Shkrebko, I. Ye.

TITLE: The Role of Technical Standardization in the Establishment of Wage Scales at Nonferrous Metallurgical Enterprises (Rol' tekhnicheskogo normirovaniya v organizatsii zarabotnoy platy na predpriyatiyakh tsvetnoy metallurgii)

PERIODICAL: Tr. Ural'skogo politekhn. in-ta, 1957, Nr. 66, pp 39-50

ABSTRACT: Bibliographic entry

1. Metallurgy--USSR 2. Wages--Standards

Card 1/1



SHKREBNEV, A., brigadir, delegat XXII s"yezda Kommunisticheskoy partii  
Sovetskogo Soyuza

Lights over tundra. Okhr. truda i sots. strakh. 5 no.8:6-7 Ag '62.  
(MIRA 15:7)

1. Dobychnaya brigada shakhty No.5 kombinata "Vorkutugol'",  
zamestitel' predsedatelya shakhtennogo komiteta kombinata "Vorkutugol'".  
(Vorkuta---Coal mines and mining)

SHKREBTA, G.P. [Shkrebta, H.P.]; KRAYUSHKIN, V.A. [Kraiushtkin, V.G.];  
PORTNYAGINA, L.A. [Portniakina, I.O.]

Spores and pollen in the oils of the Carpathian oil fields. Dop.  
AN URSR no.6:746-748 1985. (MIRA 18:7)

I. Institut geologii i geokhimi goryuchikh iskopayemykh AN UkrSSR.

SHKREDOV, N.Ya.

Necessity and problems of studying the medical geography of  
the western provinces of the Ukraine. Geog. zbir. no. 7:140-  
144 '63. (MIRA 17:12)

SHKREDOVA, L.F.

Economical evaluation of various methods for the cultivation  
of Solonetz soils in Baraba. Trudy Biol. inst. Sib. otd. AN  
SSSR no.9:232-241 '62 (MIRA 17:8)

PUSHKAREVA, P.V.; SHKREDOVA, L.F.

Methods of calculating the needs of collective and state farms  
for machinery using electronic computers. Nauch. trudy SibVIM  
no.1:93-99 '63. (MIRA 17:8)

1954. 1.1.

117

Organizatsiya Ritsrichnyy raboty konveyerou u shueynom tsakne. Uirek.  
chulochno-briforazunnya fabrika im. KIM. M., Gizleg prom). 1954. 32 s  
20 cm (U-uo puch. leuarou shirovoro potre'leniya SSSR Tekhn. uor. Otd.  
Tekhn. informatsii. Obrazn. peredouym opytom). 1,800ekz. 5 k. --Sest.  
Idkasan na oborote tir. L. -- (S4-54747) p 677,661:687.1): 658.281

SO: Knizhanaya, Letonis, Vol. 1, 1955

VUL'FSON, N.S.; ZARETSKIY, V.I.; PUCHKOV, V.A.; ZAIKIN, V.G.; SHKROB, A.M.;  
ANTONOV, V.A.; SHEMYAKIN, M.M., akademik

Mutual transformations of cyclols and cyclodepsipeptides studied  
by the method of fragmentary mass spectrometry. Dokl. AN SSSR  
153 no.2:336-339 N '63. (MIRA 16:12)

1. Institut khimii prirodnikh soedineniy AN SSSR.

ANTONOV, V. K.; SHEMAKIN, M. M.; SHKROB, A. M.

"New data on hydroxy- and amino-acyl incorporation into peptide systems."

report submitted for the 7th European Peptide Symp, Budapest, 3-8 Sep 64.



ZARETSKIY, V.I.; VUL'FSON, N.S.; ZAIKIN, V.G.; KISIN, A.V.; SHKROB, A.M.;  
ANTONOV, V.K.; SHERYAKIN, M.M.

Mass spectrometric study of cyclols containing aromatic rings.  
Izv. AN SSSR Ser. khim. no.11:2076--2079 N '64 (MIRA 18:1)

1. Institut khimii prirodnikh soyedineniy AN SSSR.

ANTONOV, V.K.; SHKROB, A.M.; SHEMYAKIN, M.M.

Activation of the amide group by acylation. Part 3: Oxyacyl  
inclusion reaction in the N-oxyacyllactam series. Zhur. ob.  
khim. 35 no.8:1380-1389 Ag '65. (MIRA 18:8)

1. Institut khimii prirodnikh soyedineniy AN SSSR.

CHEROB, A.M.; KRYLOVA, Yu.I.; ANTONOV, V.K.; SHEMYAKIN, M.M.

Activation of the amide group by N-acylation. Part 4: Formation  
and conversions of aromatic cyclols. Zhur. ob. khim. 35 no.8:  
1389-1398 Ag '65. (MIRA 18:8)

1. Institut khimii prirodnikh soedineniy AN SSSR.

PA 26722

USSR/Engineering  
Boilers, Low Pressure  
Water Systems

Mar 1947

"Selection of an Efficient Method for Water  
Output and Drainage for Low Pressure Industrial  
Boiler Installations," M. S. Shkrob, Engr, 4 pp

"Yest Inzher 1 Tekh" No 3

Serious damage can result to industrial boilers as a  
result of lack of water. It is expensive, not only  
in labor and time lost, but also in replacement of  
damaged material. The author gives critical data  
for various types of low pressure boilers as a  
means of determining the critical limits for

ID

26722

USSR/Engineering

(Contd.)

Mar 1947

operation of such installations. He also recommends  
that some efficient method should be established  
for automatically recording the critical limits  
and compensating for them before any damage is  
done.

TM

26722

20

SHKROB M.S.  
B

Selection of Rational Methods for Water Treatment and Scavenging in Low-Pressure Boilers. (In Russian) M

S. Shkrey, *Industrial Power* (U.S.S.R.), v. 4, no. 1, 1947.

On the basis of experimental data compiled from the records of operation of low-pressure boilers in the U.S.S.R. during the years 1938-1946, the limits of applicability of intraboiler water treatment and the method of determination of the amount and type of precipitation agent required are indicated.

AS - 51.4 METALLURGICAL LITERATURE CLASSIFICATION

SHKROB, M. S.

PA 14/49T22

USSR/Engineering  
Turbines, Steam  
Steam Engineering

Sep 48

"Proceedings of the Commission of High-Pressure  
Steam Technology, Power Engineering Institute Imeni  
G. M. Krzhizhkovskiy, Academy of Sciences USSR,"  
M. S. Shkrob, 24 pp

"Iz Ak Nauk SSSR, Otdel Tekh Nauk" No 9

Discusses four problems: (1) experience in operation  
of high-pressure turbines and feed pumps; (2)  
salt deposits on turbine blades, etc.; (3) selection  
of steam characteristics for high-pressure super-

14/49T22

USSR/Engineering (Contd)

Sep 48

heated steam installations; (4) thermodynamic  
properties of high-pressure superheated steam.

14/49T22

SHKROB, M. S.

Shkrob, M. S., and Kastal'skiy, A. A., "Water Purifiers in High-Pressure Electric Power Stations." Kotloturbostroyeniye, No 5, 1949.

SHKROB, M. S., and KASTAL'SKOY, A. A.

"Water Purifiers in high-Pressure Electric Power Stations." Kotloturbostroyeniye,  
No 9, 1949.



SHKROT, I. S., ed.

(Water purification and the water system in industrial boilers) Moskva, Gos. energ. izd-vo, 1950. 302 p. (50-39643)

TJ377.G8

1. Feed-water. 2. Feed-water purification. 3. Steam-boilers - incrustations.

I. Shkrot, I.S., ed.

SHKROB, M. S.

Shkrob, M. S.: Vodopodgotovka (Water Treatment). 62  
Moscow: Gosenergizdat 1950. 476 pp. Reviewed in  
*Izvest. Akad. Nauk S.S.S.R., Otdel. Tekh. Nauk* 1953,  
625-39.

SHKROB, M.S.[author]; GOLUBTSOV, V.A. [reviewer].

"Feed water preparation." M.S.Shkrob. Reviewed by V.A.Golubtsov. Izv.  
AN SSSR Otd.tekh.nauk no.4:625-639 Ap '53. (MLRA 6:8)  
(Shkrob, M.S.) (Feed-water purification)

SHKROB, H. S. Prof. and CHUTOV, K. V. (Cor. Mbr. AS USSR)

Introduction to the book "The Theory and Practice of the Application of Ion-Exchange Agents," published by AS USSR, 1955, 164 pp.

Shkrob is a Dr. of Tech. Sci., deputy chairman, Section of Water Treatment, Commission on High-Pressure Steam, Inst. of Power Engineering, AS USSR

Discussion of book in Sum. 974, 20 Jun 56

SHKROB, M.S., doktor tekhnicheskikh nauk; SHAPKIN, I.F., redaktor;  
FRIDKIN, A.M., tekhnicheskiiy redaktor.

[Problems in designing and operating water processing apparatus  
in thermal electric power stations] Voprosy proektirovaniia i  
ekspluatatsii vodopodgotovitel'nykh ustanovok na teplovykh  
elektrostantsiakh, Moskva, Gos. energ. izd-vo, 1955. 189 p.  
(Feed water) (MLRA 8:8)  
(Electric power plants)

SHKROB, M. S.

Subject : USSR/Electricity AID P - 2327  
 Card 1/1 Pub. 110-a - 8/17  
 Authors : Shkrob, M. S., Dr. of Tech. Sci., Prof., and M. Sokolov,  
 Kand. of Tech. Sci.  
 Title : Selecting efficient systems for feed treatment for high  
 and superhigh pressure drum type boilers  
 Periodical : Teploenergetika, 5, 38-44, My 1955  
 Abstract : The article describes 7 possible ways of feedwater treat-  
 ment for high and superhigh pressure boilers and illus-  
 trates in tables the content and characteristics of various  
 types of water. Five types of water in the natural state  
 are analyzed. Feedwater supply installations are discus-  
 sed with diagrams. Some recommendations are made on the  
 treatment of water types. Seven diagrams. Three Russian  
 references, 1944-1952.  
 Institutions: Power Engineering Institute, Academy of Sciences, USSR,  
 and PROMENERGOPROYEKT of the Ministry of Electric Power  
 Stations  
 Submitted : No date

SHKROB, M. S.      Prof. Dr.Tech.Sci.

"Feed-Water-Treatment in High-Pressure Power-Plants," paper presented at  
the 5th World Power Conference, Vienna, 1956

In Branch#5

SHKROB, M.S.  
PAKSHVER, V.B. [translator]; KLYACHKO, V.A. [translator]; SHKROB, M.S.,  
professor, doktor tekhnicheskikh nauk, redaktor; KOMAROV, M.P.,  
redaktor; FRIDKIN, A.M., tekhnicheskii redaktor

[Water preparation and water operating conditions in boilers of  
thermal electric power plants; a collection of articles.  
Translated from the English, German and French] Vodopodgotovka i  
vodnyi rezhim kotlov na teplovykh elektrostantsiakh; sbornik  
statei. Perevod s angliiskogo, nemetskogo i frantsuzskogo. Pod  
red. M.S.Shkroba. Moskva, Gos.energ. izd-vo. No.4. [Thermo-  
chemical and thermal preparation of feed water for steam boilers  
in thermal electric power plants in the United States], Termo-  
khimicheskaya i termicheskaya obrabotka pitatel'noi vody parovykh  
kotlov na teplovykh elektrostantsiakh SShA. 1957. 79 p.  
(Feed--Water purification) (MIRA 10:7)



*SHKROB, M.S.,*  
CHERNYAYEV, I.I., akademik; red.; STYRIKOVICH, M.A., red.; CHMUTOV, K.V., red.;  
*SHKROB, M.S.,* doktor tekhn.nauk, red.; RAVICH, M.I., doktor khim.  
nauk, red.; PIROPOL'SKIY, Z.L., red, izd-va; SHAPRKIN, I.P., red.  
izd-va; KISELEVA, A.A., tekhn.red.

[Intra-boiler physical and chemical process, water preparation and  
water operations of boilers in electric power plants of high and  
ultrahigh parameters] Vnutrikotlovye fiziko-khimicheskie protsessy,  
vodopodgotovka i vodnye rezhimy kotlov na elektrostantsiyakh  
vysokikh i sverkhvysokikh parametrov. Moskva, 1957. 594 p.  
(MIRA 11:2)

1. Akademiya nauk SSSR. Komissiya po paru vysokikh parametrov.
2. Chlen-korrespondent AN SSSR (for Styrikovich, Chmutov)  
(Boilers) (Electric power plants)

650

AUTHOR: Shkrob, M.S., Doctor of Technical Sciences and Shukher S.M.,  
~~Engineer.~~

TITLE: Experience of operating the first power station with super-high steam conditions. ((Opyt ekspluatatsii pervoy elektrostantsii sverkhvysokikh parametrov.))

PERIODICAL: "Teploenergetika" (Thermal Power), 1957, Vol. 4, No. 6, pp. 60 - 63 (U.S.S.R.)

ABSTRACT: The commission on high steam conditions organised on the 15th-18th May a scientific-technical session to consider operating experience with the Cherepetsk regional electric power station. This article gives an account of the various contributions made to the session and of the decisions taken.

The Cherepetsk station contains a great deal of new types of equipment of Soviet manufacture which has given rise to a number of unexpected difficulties. Particular attention was paid to the study and correction of the circulation in the boiler screens, the separation and steam washing devices and measures against slag formation in the furnaces, etc.

The Venyukovskiy fittings works, in close collaboration with the Research Institutes, developed 32 types of fittings suitable for super-high steam conditions. However, more experimental and research work on fittings is required.

On the basis of operating experience a number of changes have been made in the design of the turbines. For instance,

Card 1/12

650

Experience of operating the first power station with super-high steam conditions. (Cont.)

the works modernised the flow part of the high pressure section of turbine No. 3, namely, profiles of improved aerodynamic properties were used for the velocity wheels and the pressure stages; steps were taken to reduce leakage through the axial gaps at the blade shrouds; the number of pressure stages in the high pressure section was increased from 7 to 8. These measures increased the turbine efficiency by about 2%.

On the basis of operating experience with the first two turbines, the following changes were made in the fourth turbine. The internal cylinder, which was formerly of austenitic steel, was made of pearlitic steel brand 20XMP. This became possible after development of the construction of the flanged joint between the inner cylinder of pearlitic steel and the nozzle boxes of austenitic.

Some difficulties were experienced with the packing glands on the shaft of the feed pump. The existing soft packing proved unsuitable at peripheral speeds of 36 metres/sec and a labyrinth gland was accordingly used. The use of three gap packing for the working wheels of the pump caused rotor vibration. This was found to occur if the gaps were more than 0.3 mm long. The use of single gap packing overcame this difficulty.

The tendency to make the apparatus more reliable led to the use of new factory inspection procedures including irradiation with radio-active cobalt and polishing and etching of the surfaces of parts.

650

Experience of operating the first power station with super-high steam conditions. (Cont.)

Ya.M. Ostrovskiy (Mosenergo) reported that the construction of the Cherepetsk station was commenced at the end of 1949, the first turbo-alternator set was running at the end of 1953 and the second at the end of 1954. The rated output was delivered from the station only two years after starting up. The delay was due to the novelty of the equipment and to the presence of a number of design defects. Because of power plant shortage the plant could not be shut down for adjustments. Useful experience was gained in the operation of boilers with natural circulation on steam of super-high conditions. Experience was gained in the use of austenitic steels in gas reheaters, radiation superheaters and steam washers. Experience has shown that it will be possible to use the block circuit without a spare boiler. The main defects of the boiler equipment were: the low efficiency of the boiler (85%) due to the high temperature of the outgoing flue gases and to excess air; the need for large injection of water into the reheater, large intake of air in the drying-milling system and in the boiler gas-ways; high ash wear of tubes in the upper row of the water economiser and of the induced draught fan; the lower parts of the air heater tubes become clogged with ash.

The boilers have often not been fully loaded and there have been many starts and stops. On an average boilers can run for

Card 3/12

650

Experience of operating the first power station with super-high steam conditions. (Cont.)

twenty days. Two turbines are now operating and two more will be running before 1958. Experience shows that the steam temperature could be raised to 580 °C using the same brands of austenitic steel. Difficulties that must be overcome include: displacement of the directing gear of the control stage; governor valve pulsation; steam emission from the horizontal joint on the external frame of the high pressure cylinder; load swinging of 5 - 7 MW; the formation of cracks in the blades and breakage of fixing wires; crumbling of removable thermal insulation. The turbine takes a very long time to start up.

Tests carried out in 1955 gave a specific heat consumption of 2 084 kcal/kWh so that the guarantees are met; the **СВК-150-1** (super-high steam conditions), condensing, 150 MW) turbine is 11.5% more efficient than the **БК-100-2** (high steam conditions, condensing, 100 MW).

Now that the feed pump glands have been attended to the pumps operate reliably. The overall efficiency of a feed pump set is 70%. In the early stages there were a number of defects in steam fittings, the governor and safety valves did not operate satisfactorily, there were defective castings, there was erosive wear of water valve seatings and trouble was experienced with the drainage valve shutters. The operation of the fittings was impaired by burrs and scale in the steam pipes

Card 4/12

650

Experience of operating the first power station with super-high steam conditions. (Cont.)

and the pressure drop in the feed control valves was high.

The following new brands of heat-resistant steel were used in the manufacture of the sets for Cherepetsk; ЛА-1 for cast parts of the turbines and fittings; ЭИ-257 for steam pumps, super-heaters and drainage; ЭИ-572 for strengthening parts; ЭИ-405 for blades and a number of forged parts and 16-CHM for boiler drums. New brands of electrodes, ИТ-7 and КТМ-5 were used for arc and contact welding. During operation the following were observed: surface pits in parts made of steel ЛА-1; surface pits in welded joints on parts made of steel ЛА-3 and cracks, mostly concentrated at places of transition from the main frame to branch pipes and flanges; cracks in super-heater tubes because small radius bends had not been heat-treated; high wear of nozzle parts; breaks and partial cracks in fluted linings of steel ЭИ-1-Т in super-high pressure fittings. Tests on steel ЭИ-257 taken from piping showed appreciable loss of plastic properties because of ageing. There were cases of welded joints breaking in service.

A.A. Belyaev of the Cherepetsk Power Station said that in two years there have been 119 enforced stoppages of the boilers for the following reasons: damage to screen tubes - 25; slagging in furnace - 8; damage to superheaters - 26;

Card 5/12

650

Experience of operating the first power station with super-high steam conditions. (Cont.)

defective fittings - 22; water economiser defects - 5; other causes - 23.

To improve the reliability of the boilers it is necessary to: sectionalise the collectors; test the operation of multi-gap burners with reduced rate of primary and secondary air; replace the lower tubular section of the air heaters by cast iron and lower the temperature of the outgoing gases to 140 °C by increasing the surface of the air heaters. New boilers should have shaft type mills instead of drum type ball mills. Construction of the feed control valve should be improved. It is necessary to operate the station on the block circuit (one turbine one boiler).

D.F. Peterson and I.E. Dubovskiy of the Central Boiler and Turbine Institute reported that until early 1955 the boilers worked with a steam load of not more than 200-210 tons/hr, and when they commenced to burn coal with more fusible ash, heavy slagging of the screens was observed at these loads. This trouble was reduced by re-arrangement of the air supply and the burners. The load could then be increased to 250 tons/hr.

Test results gave: boiler efficiency 89.5%; furnace losses 0.5 - 1%, outgoing gas temperature 165 - 175 °C; gas resistance of boilers 180 mm water; water consumption for injection to regulate superheat 5 - 10 tons/hour and to regulate reheat 8 - 12 tons/h. Cracks continue to appear in the superheater

Card 6/12

Experience of operating the first power station with super-  
high steam conditions. (Cont.)

tubes made of steel 3N-257 and in new boilers the superheaters  
are made of steel 3A-1.T.

A.A. Kot (All-Union Thermo-technical Institute) and  
Yu.V. Zenkevich (Central Boiler and Turbine Institute)  
reported that thermal-chemical tests were made on the boilers  
at 180-185 atm. after reconstruction of delivery of steam-  
water mixture to the main drum. The salt content of the  
steam in the salty sections was approximately the same before  
and after the main drum. Depending on the alkalinity of the  
boiler water the carry-over factor of silicic acid from the  
cyclones was 2.5 - 12%. Depending on the load the salt content  
of the steam and the carry-over factor of sodium ions (sodium  
salts) from the main drum were 0.07 - 0.15 mg/kg and 0.15 -  
0.35%, respectively. The carry-over factor of silicic acid  
reached 11%. After washing the steam with 20% of the feed  
water the silicic acid content fell by a factor of 3.8,  
(boiler 1) and after washing with 40% of feed water by a  
factor of 4.5 (boiler 2). Silica deposition in the high  
pressure section of the turbine occurs when the silicic acid  
content of the steam at inlet is above 0.07 kg/mg. In the  
medium and low pressure sections silica deposition occurs  
when the silica content of the inlet steam to the medium  
pressure section is 0.01 - 0.02 mg/kg. When the salt content

Card 7/12



b5u

Experience of operating the first power station with super-high steam conditions. (Cont.)

of the steam is about 0.02 - 0.03 mg/kg and the concentration of silicic acid is not greater than 0.02 mg/kg no deposits are formed in the turbine. To improve the steam quality it is recommended to improve steam separation in the main drum, to double the output of the salty sections by limiting three-stage evaporation and to unite the salty sections so that there is only one blow-down point.

L.A. Dunayev (Cherepetsk Station) reported on the loads taken by the turbines. The main defects were: excessive expansion of the high pressure rotor relative to the stator on starting and increasing load, also contraction on dropping load, so that starting up and shutting down times are very long; available condensate injection into the receiver pipes between the medium and low pressure section does not reduce the temperature enough; the method of governing is complicated; the oil cooler is not big enough. For future equipment of similar kind it is recommended: to replace the evaporator installation by chemical de-salting of make-up water; to do away with the gland steam heater, directing the steam to the medium pressure section; to do away with the spare high pressure heater; to replace the steam ejectors by water; to use the cascade principle of drainage with delivery to the condenser; to replace the de-aerators by closed volumes under pressure, de-aerating the feed water in the condensers; to

Experience of operating the first power station with <sup>650</sup>super-high steam conditions. (Cont.)

extend the block (unit) principle to the cooling water systems. Trouble was experienced with the feed pump glands.

V.P. Lobanov and V.P. Murganov (All-Union Thermo-technical Institute) on the basis of operating experience with the turbine and associated equipment concluded that: the turbine met the heat consumption guarantee with the normal tolerance; the internal relative efficiency of the high pressure cylinder for conditions when three governor valves are open is 73% (3.3% different from the calculated value); the internal efficiency of the medium pressure cylinder is 88.4% (calculated 88.9%); the regenerative temperatures are as designed; the drainage cooler for the heating steam from the high pressure heater works unsatisfactorily, the drainage is not cool enough; steam leakage through the labyrinth glands into the third bleeding point and to the gland heater are bigger than the designed values. Test data on the governor system are given and it is concluded that the requirements are met, both in normal operation and when the generator is disconnected from the power system.

A.V. Ratner, V.G. Zelinskiy, P.M. Gura (All of the All-Union Thermo-technical Institute) and M.E. Zaydman (Cherepetsk Station) reported that tests on the fittings had revealed new effects including a tendency to scoring of austenitic steels, hydro-

Card 9/12

650

Experience of operating the first power station with super-high steam conditions. (Cont.)

genisation and corrosive action of certain sorts of graphite, etc. It is necessary to find more stable materials for fittings and various recommendations are made about valve design.

To facilitate maintenance - inspection of creep in steam piping, the erection organisation should record the batch numbers of the pipes and the pipe manufacturers should indicate in their documents the numbers of pipes with the least favourable characteristics in respect of creep. This would simplify inspection procedure. It is still early to differentiate between the behaviour of joints which have or have not been heat-treated after welding.

A.Ya. Kagan (All Union Thermo-technical Institute) discussed the influence of feed water gas content on corrosion. The presence of  $\text{CO}_2$  promotes formation of copper and iron oxides. The main source of  $\text{CO}_2$  is the evaporators fed by deionised water containing bicarbonate alkalinity. Some deposits were formed in the screen tubes.

As the result of the discussion it was decided: the boiler-turbine and thermo-technical institutes should continue work on perfecting the separation systems of the Cherepetsk boilers in order to reduce the requirements in respect of purity of feed water and in order to develop ways of starting up the equipment more rapidly; to direct the attention of the boiler manufacturers to the need to increase the efficiency of boilers and auxiliary equipment to the level of the foreign practice;

050

Experience of operating the first power station with super-high steam conditions. (Cont.)

to point out to the equipment manufacturers the need to provide reliable, efficient thermal insulation which can easily be dismantled without damage; to develop furnace linings which prevent air leaks throughout the period of operation of the boilers; the Research Institutes and the Power Station to develop ways of getting salt deposits out of turbines; to improve the work of the station chemical laboratory particularly by the greater use of instrumentation for automatic control of blow-down and for other chemical tests; to extend research work on economy and efficiency; to continue work on improving fittings for super-high steam conditions; to carry out extensive testing of fittings at the Cherepetsk Station; the behaviour of austenitic steels and welded joints to be observed carefully to gain experience; to press on with work to reduce pressure drops in feed water control valves; the Research Institutes should review the methods and quantity of inspection of metal under operating conditions in order to simplify and cut down the work; a complex brigade to be formed from a number of interested bodies to make an all-round study of the causes of faults in steam pipes for super-high pressures; the matter of steam pipe supports to be examined, methods of expansion compensation to be verified and design to be reviewed to

Card 11/12

650  
Experience of operating the first power station with super-  
high steam conditions. (Cont.)

relieve loads on assembled joints as far as possible.

No figures, no literature references.

AVAILABLE:

Card 12/12

AKOL'ZIN, P.A.; GURVICH, S.M.; KOTLYAR, R.V.; KOT, A.A.; MAMET, A.P.;  
MIKHAYLENKO, P.S.; PROKHOROV, F.G.; SOKOLOV, I.M.; CHERNOVA, L.A.;  
SHKROB, M.S.; YANKOVSKIY, K.A.; GUREVICH, L.S.; POLYAKOV, V.V.

To the editors of "Energetik." Energetik 5 no.3:11-12 Mr '57.  
(MIRA 10:3)

1. Vsesoyuznyy teplotekhnicheskii institut im. Dzerzhinskogo (for Akol'zin, Kot, Yankovskiy) 2. Tsentral'nyy kotloturbinnyy institut (for Gurchich, Mamet,) 3. Teplo-elektro-proekt (for Gurevich). 4. Ministerstva elektrostantsiy (for Kotlyar, Prokhorov). 5. Teplovaya elektricheskaya tsentral'naya stantsiya No.9 (for Mikhaylenko, Polyakov) 6. Perevyazochnyy etapnyy punkt (for Sokolov). 7. Moskovskoye rayonnoye upravleniye energokhozyaystva (for Chernova). 8. Energeticheskii institut Akademii nauk SSSR (for Shkrob).  
(Boilers)

SHKROB, M. S.

6-2

507/30-53-45/51

AUTHOR: Chernova, T. V.

TITLE: Problems Concerning the Water Conditions in Electric Power Plants (Voprosy vodnogo reshima elektrostantsiy) Conferences in the Institute of Power Engineering ( oveshchaniya v energeticheskou institute)

PERIODICAL: Vestnik Akademii nauk SSSR, 1958, Nr 9, pp. 117-119 (USSR)

ABSTRACT: From May 26 to May 28 a scientific technical meeting was held by the Komissiya para vysokikh parametrov pri Energeticheskou institute im. G. M. Erzhizhanovskogo (Committee for High Pressure High Temperature Steam of the Power Engineering Institute imeni G. M. Erzhizhanovskiy). Problems of water conditions and water treatment were dealt with as well as the guarantee of the purity of steam in atomic power plants. Representatives of academic and branch institutes as well as of universities and other interested organizations participated in the conference. It was found that these problems have hitherto not carefully enough been dealt with. The investigation of thermo-physical and physico-chemical processes which take place in atomic power plants is regarded as a

Card 1/3

807/30-58-9-45/51

Problems Concerning the Water Conditions in Electric Power Plants. Conferences in the Institute of Power Engineering

main problem of research. It was recommended to promote the further development of radiometrical laboratories and to intensify coordination. It was decided to call a meeting which will have to deal with problems of the method of measuring, control measuring devices and others. From June 24 to June 27 a conference was held by the Committee for High Pressure High Temperature Steam and the Ministerstvo elektrostantsiy SSSR i Moskovskoye otdeleniye Nauchno-tekhnicheskogo obshchestva energeticheskoy promyshlennosti (Ministry of Electric Power Plants USSR and the Moscow Department of the Scientific Technical Association of Power Industry). In this conference the problems of water treatment in thermal power plants for different steam pressure were treated. The following reports were delivered: M. S. Shkrob opened the conference and spoke about the present state and the prospects in the development of water treatment in electric power plants in general. V. M. Kvyatkovskiy, V. F. Gvozdev, Ye. N. Krasotkin and others described plants for water treatment. A. A. Krupchitskiy spoke about the planning of combined cationic plants. O. N. Shemyakina dealt with the purification of water

Card 2/3



Shkreb M.S.

TABLE I BOOK REFLECTIONS 807/3407

Academy book 8888. Scientifically justify the O.K. Khrushchev's  
 Problem especially: shortly postgraduate students O.K. Khrushchev  
 (Problems of Power Engineering) Collection of Articles Dedicated to Ac-  
 cademic O.K. Khrushchev Moscow, 1979. 851 p. Extra copy inserted.  
 2,500 copies printed.

Ed. of Publishing House: B.N. Astrakhan, Z.Y. Dobson, P.I. Dobson, and  
 S.M. Kopylov. Tech. Ed.: S.A. Krasovskiy, Editorial Board: A.V. Viner,  
 Krasovskiy (deceased), V.I. Popov (deceased), V.I. Popov (deceased),  
 Academy of Sciences USSR, V.I. Popov, A.S. Ponomarev, K.A. Bytkovich,  
 K.Y. Chernikov, S.M. Krasovskiy, Candidate of Technical Sciences, B.N. Dobson,  
 Candidate of Technical Sciences, K.M. Krasovskiy, Candidate of Technical Sciences,  
 and his family.

PROLOG: This collection of articles is intended as a tribute to the memory  
 of Academician O.K. Khrushchev.

CONTENTS: The collection contains sixty articles by former students and  
 co-workers of the deceased Academician. The articles deal with problems  
 of a wide range of subjects in the field of power engineering: problems  
 of the regional development of electrical and thermal power engineering,  
 power engineering technology and the physics of combustion. No personalities  
 are mentioned. References are given after most articles.

Bury, N.G., V.A. Shilov. Investigation of Heat Exchange in  
 Particular Condensation of Pure Vapors 411

Bury, N.G. Basic Methods of the Present Theory of Heat Exchange  
 of Radiation 423

Andriy, V.H., O.L. Polyn. Photographic Method of Measuring Luminous  
 Fluxes 470

Bytkovich, M.A., I.D. Deychik, and L.K. Khrushchev. Effect of  
 the Rules of Solubility of Substances in Water Vapor on Boiler  
 Water 483

Plavov, Ye.K. The Role of Science in the Development of Soviet Wind  
 Technology 496

Bytkovich, M.A., M.S. Shkreb. Results of the Activity of the  
 Commission for High Temperature Steam and Scientific Tasks in  
 Increasing the Reliability and Economy of Thermal Electric Power  
 Stations in the Future 506

Gubanov, Z.Y. Basic Principles of Power Engineering 513

Gubanov, Z.Y. Problem of the Mechanism of Thermal Decomposition  
 of Fuels 564

Gubanov, Z.Y. Dynamics of the Process of Separating Volatile  
 Substances from Solid Fuels 575

Kaluzhny, V.V. High-Speed "Termination" of Solid Fuels (Retarded  
 Combustion) 583

Kaluzhny, A.P. Intensity of Burning Fuels and Control of the  
 Process of Their Thermal Decomposition 595

Kaluzhny, L.M. Theory of Combustion and Problems of Intensification  
 of the Processes of Burning 605

Boyshev, V.A., V.M. Lyayev, V.I. Artyev, B.B. Galkov. Burning  
 of Turbines Gas-Turbine Engines in Different Types of Chambers 637

Dobson, Ye.Ye. Two-1 and High-Speed Processes 659

Lyayev, A.V. Mass-Heat Exchange in Gas and Chemical Transformations  
 673

Belikov, M.S. Burning Deep Substances 681

Gubanov, Z.Y., A.M. Krasovskiy, A.P. Khrushchev. Distillation of Cut  
 "Partial Power" Engineering 687

Solov'ev, B.I. Flow of Gas During Ignition Occurring Beyond the  
 "Shock Wave" 735

Plavov, V.S. Structure of Heterogeneous Flow in a Shock Front  
 745

Prodnolov, A.S. Motion of Combustion Zone as a Hydrodynamic  
 Instability 795

SHKROB, M.S., prof., doktor tekhn. nauk, red.; KORINOVSKIY, I.K., red.;  
LARIONOV, G.Ye., tekhn. red.

[Feed water treatment and water systems of boilers in thermal electric  
power plants] Vodopodgotovka i vodnyi rezhim kotlov na teplovykh  
elektrostantsiyakh. Pod red. M.S.Shkroba. Moskva, Gos.energ.izd-vo.  
No.8. 1959. 159 p. (MIRA 14:12)

(Feed-water purification)

(Electric power plants—Equipment and supplies)

SOV/96-59-3-19/21

AUTHORS: Shkrob, M.S., Doctor of Technical Sciences  
Morozov, B.I., Candidate of Technical Sciences

TITLE: Research Programmes for Improving the Economy of Thermal Power Stations in the USSR (Perspektivy razvitiya nauchnykh issledovaniy po povysheniyu ekonomichnosti teplovykh elektrostantsiy v SSSR)

PERIODICAL: Teploenergetika, 1959, Nr 3, pp 85-87 (USSR)

ABSTRACT: A great deal of research work is being done on the power industry because of its rapid development. The High-Pressure Steam Commission of the Power Institute A.Sc. USSR has been given the task of going into the work and coordinating the efforts of the Institutes of the Ac.Sc. USSR and of the Republican Academies of Science as well as other scientific research institutes and colleges. Moreover, the commission systematically coordinates the research work of these organisations on the problem of high steam conditions. A list is then given of the Institutes engaged in the work but they are, however, nearly all identified only by their initials. Work done in 1958 to raise the economy of thermal power stations is

Card 1/3

SOV/96-59-3-19/21

Research Programmes for Improving the Economy of Thermal Power  
Stations in the USSR

then reviewed together with the Institutes working on these problems. A list is also given of the conferences that the commission organised on the subject. A similar list of research topics for 1959 is then given. The main ones are: drafting skeleton thermo-dynamic tables for water and steam; inventing and introducing new grades of heat-resistant steels of the pearlitic and austenitic classes for temperatures of 600-700°C; development of new grades of efficient and stable ion-exchange resins suitable for water treatment; increasing the efficiency of large turbines by improving the aerodynamics of the blading; developing new types of burners and auxiliary equipment for unit sets with output of 300-600 MW; seeking methods of raising the efficiency and reliability of boiler/turbine units; developing the automation of unit-type-power stations; developing heat-supply systems for large towns; improving heat-exchange processes in boilers, atomic reactors and in the steam generators of atomic power stations. A list is then given of the conferences that will be called on the

Card 2/3

SOV/96-59-3-19/21

Research Programmes for Improving the Economy of Thermal Power  
Stations in the USSR

subject in 1959. In some cases detailed lists of  
papers are given. Other work that will be undertaken  
by the commission is also described.

Card 3/3

SHKROB, M.S., doktor tekhn.nauk

Conditions of water treatment in steam-power installations of the U.S.S.R.  
and outlook for its development. Elek.sta. 30 no.1:17-20 Ja '59.  
(Feed water) (MIRA 12:3)

PROKHOROV, F.G., kand.tekhn.nauk; AKOL'ZIN, P.A., doktor tekhn.nauk;  
SHKROB, M.S.

Basic problems pertaining to the treatment of feed water for  
steam power plants during the current seven-year plan. Teplo-  
energetika 7 no.3:3-8 Mr '60. (MIRA 13:5)

1. Ministerstvo stroitel'stva elektrostantsiy, Vsesoyuznyy  
teplotekhnicheskiy institut i Energeticheskiy institut AN SSSR.  
(Feed-water purification) (Steam power plants)

MAMET, A.P., doktor tekhn.nauk; SHKROB, M.S., doktor tekhn.nauk

Water norms for low-pressure boilers. Energetik 8 no. 12:25-  
28 D '60. (MIRA 13:12)

(Boilers)

(Feed water)



SHKROB, M.S., prof., doktor tekhn.nauk, red.; KORIKOVSKIY, I.K., red.;  
BORUNOV, N.I., tekhn.red.

[Feed-water purification and operating conditions of boilers at  
thermal electric power plants] Vodopodgotovka i vodnyi rezhim  
kotlov na teplovykh elektrostantsiyakh. Pod red. M.S.Shkroba.  
Moskva, Gos.energ.izd-vo. No.9. 1960. 191 p.

(MIRA 13:12)

(Feed-water purification)

(Electric power plants)

SHKROB, Mikhail Samoylovich, doktor tekhn. nauk; PROKHOROV, Fedor Georgi-  
yevich, kand. tekhn. nauk. Prinsipali uchastiye: AKOL'ZIN, P.A.,  
doktor tekhn. nauk; APEL'TSIN, I.E., doktor tekhn. nauk; ZENKEVICH,  
Yu.V., kand. tekhn. nauk; KVIATKOVSKIY, V.M., kand. tekhn. nauk;  
KLYACHKO, V.A., doktor tekhn. nauk; CURVICH, S.M., inzh.; ORZHEROV-  
SKIY, M.A., inzh.; STYRIKOVICH, M.A., retsenzent; MARTYNOVA, O.I.,  
retsenzent; VORONIN, K.P., tekhn. red.

[Water treatment and water systems for steam-turbine electric power  
plants] Vodopodgotovka i vodnyi rezhim paroturbinnnykh elektrostantsii.  
Moskva, Gos. energ. izd-vo, 1961. 470 p. (MIRA 14:9)  
(Feed water purification) (Steam turbines)

SHKROB, M.S.; ZENKEVICH, Yu.V.

Water and chemical conditions in boilers. Vodopod., vod. rezh.  
i khimkont. na parosil. ust. no.1:7-26 '64. (MIRA 18:2)

1. Vsesoyuznyy zaochnyy energeticheskiy institut i TSentral'nyy  
nauchno-issledovatel'skiy i proyektno-konstruktorskiy  
kotloturbinnyy institut imeni I.I. Polzunova.

SHKROB, M.S.

Water treatment in foreign steam power plants. Vodopod., vod.  
rezh. 1 khimkont. na parosil. ust. no.1:86-109 '64. (MIRA 18:2)

1. Vsesoyuznyy zaochnyy energeticheskiy institut.

SHKROB, M.S.; MESHCHERSKIY, N.A.

Bibliographic index of literature and magazine articles on water treatment, water conditions and chemical control in thermal electric power plants. Vodopod., vod. rezh. i khimkont. na parosil. ust. no.1:176-197 '64. (MIRA 18:2)

33292 SHKROB, N. V.

Sluchay neobychnogo vetvleniya vnutrenney arterii Molochnoy zhelezy. Sbornik trudov (Arkhang. gos. med. in-t), vyp. 9, 1949, s. 36-33. - Bibliogr: 15 nazv.

SHKROB, O.S.

Prevention of acute gastric atony following resection. Sov.med.  
18 no.3:28-31 Mr '54. (MLRA 7:2)

1. Iz fakul'tetskoy khirurgicheskoy kliniki im. akad. N.N.Burdenko  
(direktor - zasluzhennyy deyatel' nauki professor N.N.Yelanskiy)  
I Moskovskogo ordena Lenina meditsinskogo instituta.  
(Stomach--Surgery)

SHKROB, O.S.,kand.med.nauk; MARINBERG, V.A.,kand.med.nauk

Differential diagnosis of disorders of gastric evacuation  
following stomach resection. Khirurgiia 35 no.2:33-41  
F '59. (MIRA 12:5)

1. Iz fakul'tetskoy khirurgicheskoy kliniki imeni akad.  
N.N.Burdenko (dir. - zasluzhennyy deyatel' nauki prof.  
N.N.Yelanskiy) I Moskovskogo ordena Lenina meditsinskogo  
instituta imeni I.M.Sechenova.

(GASTRECTOMY, compl.

postop. gastric hypotonia, differ. diag.  
(Rus))



CHISTOVA, M.A., kand.med.nauk; SHKROB, O.S., kand.med.nauk

Some forms of visceral candidomycosis resulting from antibiotic therapy. Khirurgiia 35 no.7:69-75 J1 '59. (MIRA 12:12)

1. Iz kafedry fakul'tetskoy khirurgii (zav. - zasluzhennyy deyatel' nauki prof. N.N. Yelanskiy) lechebnogo fakul'teta I Moskovskogo gosudarstvennogo ordena Lenina meditsinskogo instituta im I.M. Sechenova.  
(ANTIBIOTICS, effects, injurious)  
(MONILIASIS, etiology)

SHKROV, O.S., kand.med.nauk

Treatment of high obstruction of the digestive tract developing  
after resection of the stomach. Khirurgiia 35 no.12:38-44 D  
'59. (MIRA 13:6)

1. Iz fakul'tetskoy khirurgicheskoy kliniki imeni akad. N.N.  
Burdenko (zav. - zasluzhennyy deyatel' nauki prof. N.N. Yelanskiy)  
Pervogo moskovskogo ordena Lenina meditsinskogo instituta imeni  
I.M. Sechenova.

(GASTRECTOMY complications)  
(INTESTINAL OBSTRUCTION therapy)

SHKROV, O.S., dotsent; KIPRENSKIY, Yu.V.

Elephantiasis of the extremities and results of its treatment.  
Sov.med. 25 no.8:84-89 Ag '60. (MIRA 13:9)

1. Iz fakul'tetskoy khirurgicheskoy kliniki im. N.N. Burdenko  
(dir. - prof. N.N. Yelinskiy) I Moskovskogo ordena Lenina meditsin-  
skogo instituta im. I.N. Sechenova.  
(ELEPHANTIASIS)

KUZIN, M.I.; SHKROB, O.S.; SACHKOV, V.I.

Prevention and therapy of asphyxia due to avulsion of a bronchial  
tumor during surgery. Khirurgiia 36 no.7:108-115 Je '60.

(MIRA 13:12)

(BRONCHI--TUMORS)

(ASPHYXIA)

KODOLOVA, I.M.; PAVLIKHINA, L.V.; SHKROB, O.S.

Extramedullary plasmocytoma with dysproteinemic manifestations.  
Probl.gemat.i perel.krovi no.7:53-58 '61. (MIRA 14:9)

1. Iz kafedry patologicheskoy anatomii. (zav. - chlen-korrespondent AMN SSSR prof. A.I. Strukov) i kafedry fakul'tetskoy khirurgii (zav. - prof. N.N. Yelanskiy) I Moskovskogo ordena Lenina meditsinskogo instituta imeni I.M. Sechenova.  
(MARROW--TUMORS) (BLOOD PROTEIN)

SHKROB, O.S., dotsent; DREMINA, T.N.

Treatment and prevention of cardiac insufficiency after operations  
on the lungs. Khirurgiia 37 no.1:61-67 Ja '61. (MIRA 14:2)

1. Iz fakul'tetskoy khirurgicheskoy kliniki (zav. - zasluzhennyy  
deyatel' nauki prof. N.N. Yelanskiy) I Moskovskogo ordena Lenina  
meditsinskogo instituta imeni I.M. Sechenova.  
(LUNGS—SURGERY) (HEART FAILURE)

KUZIN, M.I., prof.; SHKROB, O.S., dotsent; SACHKOV, V.I.

Hypoxia in thoracic surgery and its sequelae. Khirurgiia 37  
no.4:116-122 '61. (MIRA 14:4)

1. Iz kafedry fakul'tetskoy khirurgii (zav. - zasluzhenyy  
deyatel' nauki prof. N.N. Yelanskiy) I Moskovskogo ordena  
Lenina meditsinskogo instituta imeni I.M. Sechenova.  
(CHEST--SURGERY) (ANOXEMIA)

SHKROB, O.S., dotsnet; POMELOV, V.S. (Moskva)

Case of aneurysm of the pulmonary artery. Klin.med. no.4:122-  
125 '62. (MIRA 15:5)

1. Iz fakul'tetskoy khirurgicheskoy kliniki imeni N.N. Burdenko  
I Moskovskogo ordena Lenina meditsinskogo instituta imen I.M.  
Sechenova (dir. - zasluzhenny deyatel' nauki prof. N.N. Yelanskiy).  
(ANEURYSMS) (PULMONARY ARTERY--DISEASES)



SHKROB, O.S., dotsent; POMELOV, V.S.

Evaluation of various diagnostic methods in primary pulmonary  
cancer. Khirurgiia no.1:64-71 '62. (MIRA 15:11)

1. Iz fakul'tetskoy khirurgicheskoy kliniki (zav. - zasluzhennyy  
deyatel' nauki prof. N.N. Yelanskiy) I Moskovskogo ordena Lenina  
meditsinskogo instituta imeni I.M. Sechenova.  
(LUNGS--CANCER)

SHKROB, O.S. (Moskva, V-48, Novodevichiy prospekt, d.2, kv. 142);  
POMELOV, V.S.; SLADKOVICH, V.S.

Diagnosis of inoperability in pulmonary cancer. Grudn. khir. 4  
no.5:66-72 S-0'62 (MIRA 17:3)

1. Iz fakul'tetskoy khirurgicheskoy kliniki (zav. - zasluzhen-  
nyy deyatel' nauki prof. N.N. Yelanskiy) I Moskovskogo medi-  
tsinskogo instituta imeni I.M.Sechenova.

YELANSKIY, N. N., prof.; SHKROB, O. S., dotsent; RYABTSEV, V. G., kand.  
med. nauk; MLYNCHIK, V. Ye., kand. med. nauk

Some problems in the diagnosis and surgical treatment of cancer  
of the esophagus and cardia. Khirurgiia 38 no.7:37-43 J1 '62.  
(MIRA 15:7)

1. Iz kafedry fakul'tetskoy khirurgii (zav. - zasluzhennyy deyatel'  
nauki RSFSR prof. N. N. Yelanskiy) I Moskovskogo ordena Lenina  
meditsinskogo instituta imeni I. M. Sechenova.

(STOMACH—CANCER) (ESOPHAGUS—CANCER)

SHKROB, O.S.; AKZHIGITOV, G.N.

Indications and contraindications to the surgical treatment  
of primary carcinoma of the lung. Grud. khir. 5 no.6:75-79  
N-D'63 (MIRA 17:2)

1. Iz kafedry fakul'tetskoy khirurgii ( zav. - prof. N.N.  
Yelanskiy) I Moskovskogo ordena Lenina meditsinskogo institu-  
ta imeni I.M.Sechenova. Adres avtorov: Moskva, B.Pirogovskaya  
ul., d. 2/6, kafedra fakul'tetskoy khirurgii I Moskovskogo  
ordena Lenina meditsinskogo instituta imeni I.M.Sechenova.

SHKROB, O.S., dotsent

Some problems in the diagnosis and surgical treatment of lung cancer. Khirurgiia 40 no.4:119-126 Ap '64 (MIRA 18:1)

1. Fakul'tetskaya khirurgicheskaya klinika (sav. - prof. K.M. Yelanskiy) I Moskovskogo ordena Lenina meditsinskogo instituta imeni I.M. Sechenova, Moskva.

KUZIN, M.I., prof.; SHKROB, O.S., dotsent; SACHKOV, V.I., kand. med. nauk

Basic problems of general anesthesia in lung cancer surgery. Khirurgiia 40 no.7:3-8 J1 '64. (MIRA 12:2)

1. Fakul'tetskaya khirurgicheskaya klinika (zav - zasluzhenyy deyatel' nauki prof. N.N. Yelanskiy) I Moskovskogo ordena Lenina meditsinskogo instituta imeni Sechenova.

SHKROB, O.S., dotsent; NIKOLAYEV, A.V., kand. med. nauk

Surgical treatment of cancer of the gastric stump. Khirurgiia 41  
no.4:56-60 Ap '65. (MIRA 18:5)

1. Fakul'tetskaya khirurgicheskaya klinika (zav. - prof. N.N.  
Yelanskiy [deceased]) I Moskovskogo ordena Lenina meditsinskogo  
instituta imeni Sechenova.

MININ, M.I. (Moskva, ul. Griban, 1. 11, korp. 1, et. 4) 1918, 1. 1. 1918;  
EMERSON, A.A.; TATYAN, A.S.

Some essential problems concerning operative methodology in  
primary cancer of the lungs. Grad. khir. d no. 6.47.52. M.P. 1954.  
(M.P. 18.7)

1. Fakultetskaya khirurgicheskaya klinika (nav. - prof. I.M.  
Yelanskiy [deceased]) i Moskovskogo meditsinskogo instituta  
imeni I.M. Sechenova.



PETRUNIN, A.M.; LOKTIONOVA, N.A.; AL'TMAN, M.B., rukovoditel' raboty;  
Prinimali uchastiye: LOZHICHEVSKIY, A.S.; SHKROB, V.A.; POSTNIKOV,  
A.S.; ARBUZOV, B.A.; PANTYUSHKOVA, N.S.; POBOCHINA, T.V.;  
PATRUSHEV, L.M.

Mastering the production of large Al8 alloy castings. Alium.  
splavy no.1:150-159 '63. (MIRA 16:11)

ACC NO: 000001047

SOURCE CODE: UR/2981/66/000/004/0312/0321

AUTHOR: Edel'man, M. M.; Petrusis, A. M.; Shkrob, V. N.; Starostina, Z. I.;  
Gudkov, N. I.

ORG: none

TITLE: Use of AD33 wrought aluminum alloy in the manufacture of large parts  
operating under marine conditions

SOURCE: Alyuminiyevyye splavy, no. 4, 1966. Zharoprochnyye i vysokoprochnyye  
splavy (Heat-resistant and high-strength alloys), 312-321

TOPIC TAGS: aluminum alloy, high strength alloy, metal property/AD33 aluminum alloy

ABSTRACT: A method of manufacturing large AD33 wrought aluminum-alloy parts has  
been developed. The alloy contains 0.83% Mg, 0.63% Si, 0.4% Cu, and 0.2% Cr with  
an impurity content of not more than 0.1% Mn, 0.23% Fe, 0.17% Zn and 0.035% Ti.  
Machined, round ingots, 570 mm in diameter and 1280 mm long, and 292 mm in diameter  
and 740 mm long were forged into disks 820 mm in diameter and 500 mm thick, and 560 mm  
in diameter and 375 mm thick, respectively. The disks were solution-heat treated  
at 520C, water quenched, and artificially aged at 160C for 17 hr. In this condition  
the disks had a tensile strength of 30-35 kg/mm<sup>2</sup>, a yield strength of 27-30 kg/mm<sup>2</sup>,  
and an elongation of 8-12%. Anisotropy of mechanical properties did not exceed 2 kg

*SHKROBAL, D.*  
RASHKOVA, G.; SHKROBAL, D.; DINSTBIR, Z.

Detoxicating effects of ATP. Physiol. bohém. 5 no. 4: 444-447  
1956.

(ADENYLPIROPHOSPHATE, eff.  
detoxicating eff. (Rus))

BELYAVSKAYA, T.A.; SHKROBOT, E.P.

Separation of certain cations of the third analytical group by means  
of ion-exchange chromatography. Trudy Kom.anal.khim. 6:343-350 '55.  
(MLRA 9:5)

1. Kafedra analiticheskoy khimii Moskovskogo gosudarstvennogo  
universiteta imeni M.V. Lomonosova.

(Chromatographic analysis) (Cations)